

The Colorado River Delta: Bordering on a Sustainable Future

by Rachel Hays

It has been called the greatest border-zone ecological catastrophe of the last several decades: the literal drying-up of the Colorado River before it reaches the Sea of Cortez. Except during rare years of heavy rainfall, the waters of the Colorado River now peter out in the desert sands just south of the U.S.-Mexico border, the victim of Western development upstream. For most of the last thirty years, virtually all of the river's flow has been captured, channeled, or stored behind dams in order to feed the growth of desert boomtowns and commercial agriculture.

The results of the river's desiccation have been devastating: the lower river delta ecosystem is starved of freshwater inflows, historic desert wetlands are disappearing, numerous native plant and animal species are severely threatened, and local human populations have been brought to the brink of economic ruin and cultural extinction.

The situation in Mexico is just part of the larger picture of unsustainable water use and management practices that plague the entire river, in particular the lower Colorado basin (Arizona, California, Nevada, and Baja California). "Put simply, under current laws and management regimes, there is not enough water in the system to satisfy all future human demands and to protect the river's ecological functions," wrote the authors of a recent Pacific Institute report on water use in the lower basin.

A major transboundary river that supplies water to seven states, two countries, and over 20 million users, the Colorado River illustrates the complexity of sustainably managing scarce resources across borders. Competing pressures on the river—between rural and urban users, between upper and lower basin states in the United States, and between the United States and Mexico—have fueled intense conflict over water rights for decades, and many experts predict this situation will likely worsen as growing demand pushes up against the limits of a finite water supply. Whereas for decades the river has been synonymous with conflict, recent initiatives indicate that the tide is turning, as the parties involved begin to take the steps necessary for binational cooperation, restoration, and sustainable management of the river's resources.

When U.S. state delegates met in 1922 to hammer out an accord for sharing the river, such issues of cooperation and sustainability were not foremost on their minds. The resulting document, the Colorado River Compact, divided seven U.S. states into upper and lower basins, each with rights to 7.5 million acre-feet of water a year. It wasn't until two decades later that the United States legally acknowledged Mexico's right to its own share of the river, and signed a treaty guaranteeing 1.5 million acre-feet per year for use south of the border.

But neither agreement, nor subsequent ones, have allocated any water for the environment itself. With every drop of water allocated away, the river delta ecosystem began to change as early as the 1930s, with the completion of the Hoover Dam. By the 1960s, water stopped arriving at the delta altogether. Once a 3,000 square mile expanse teeming with wildlife, the modern Colorado delta is now less than half that size. Silt that once nourished the delta and its wetlands is now trapped behind Glen Canyon dam and several other dams built on the river. Several native river fish species are at risk of extinction, threatened by changes to the river's composition as well as by non-native species introduced into the river for sport over the last century. Desiccation of the delta has also meant the disappearance of

important spawning grounds for several Upper Gulf fish species, such as the totoaba, which depended on the health of the estuary to reproduce.

Nor is it simply fish species that are threatened by overallocation of the Colorado. "Our selfish mismanagement of the river has created tremendous economic hardship for the traditional communities that used to depend on the health of the estuary," said Craig Miller of the Defenders of Wildlife, a U.S. conservation group. For over 2,000 years the Cocopa Indians fished and practiced flood-plain agriculture in the delta region. Now, however, there are few fish to be caught. What little water is available is of a quality too poor to grow traditional crops, and Cocopa survival is at stake. The inability of the river to support their traditional way of life drove many Cocopa from their homeland in search of jobs as early as the 1920s. Today the U.S.-Mexico border divides the fewer than 1500 that remain in the delta region.

Development of the river since the first part of the century has also more than doubled the salinity of the water arriving at the border. As water from the Colorado is reused and recycled on its way toward the border, it becomes increasingly saline. Tensions over salinity of the quality of Mexican entitlements escalated to crisis proportions in the 1970s, when Mexico lodged a formal complaint with the United States regarding the crop-killing salt water it was receiving. The solution was the construction of a multimillion dollar desalination plant at Yuma, Arizona, which, once it was up and running, would guarantee the quality of water delivered to Mexico at Morelos Dam. In the interim, offending irrigation drainage was rerouted away from the lower Colorado by means of an 80 kilometer concrete channel.

Twenty years later, the plant is still off-line, but the continuous rerouting of Welton-Mohawk irrigation water has had the accidental (but beneficial) side-effect of reviving the Cienega de Santa Clara—one of the most important desert wetlands in the U.S. Southwest or Northern Mexico—from its low point of 200 hectares to more than 20,000 hectares currently. But if the Yuma plant were to come on-line and receive irrigation drainage for desalting, the Cienega de Santa Clara might well disappear entirely—a Catch-22 situation that emphasizes the need for binational planning on the river.

Cooperation, Restoration

The effects of overdevelopment of the Colorado River have been felt for decades, but recent years have seen increased attention to these problems, by both governments and NGOs. "The lower Colorado is a huge ecological travesty, but it had been largely written off by the conservation community until the last few years," said Miller. Now, according to Miller, the concurrence of several factors—the rise of proposals such as water banking or water marketing, the entrance of Native American water claims into the fray of water rights, the first-time full use of water entitlements by some lower basin states, and the NAFTA-era movement toward binational decisionmaking—has pushed to the forefront the need for long-term solutions on the lower Colorado.

There are sign that progress is being made. The Mexican government established the Upper Gulf of California and Colorado River Delta Biosphere Reserve, which restricts commercial fishing and other activities within a designated core zone. In the United States, officials are experimenting with various techniques to restore habitat on the lower Colorado, including last year's controlled flood of the Grand Canyon, aimed at replenishing beaches and sandbars with sediment normally trapped behind upriver dams.

Since 1990, the U.S. North American Wetlands Conservation Act has provided matching funds for on-the-ground conservation projects in the Colorado River delta and other important wetland areas in Mexico. NAWCA funding helped organize local interests in support of a management plan for the biosphere reserve, and has assisted with feasibility studies for restoration of the Rio Hardy and Santa Clara wetland areas.

Academics and NGOs on both sides of the border are also beginning to collaborate on a sustainable future for the river. Last July, a binational group of activists and experts came together in Mexicali with

the goal of identifying specific and tangible action plans to stem the river basin's degradation. Called the Planning Group for the Colorado River, the Delta, and the Ecosystem of the Upper Gulf of California, members include representatives from PRONATURA, CEDO (Centro Intercultural de Estudios de Desiertos y Océanos, based in Puerto Peñasco, Sonora), Conservation International, the Pacific Institute, and Arizona State University. Lack of funding has limited the group's activities since that time, but according to those involved, efforts are currently mounting to revive the program and continue pursuing a regional approach to problems in the delta.

One important initiative currently under way is the Multi Species Conservation Program (MSCP), initiated by the U.S. Bureau of Reclamation two and a half years ago. This new ad hoc group was created to parry court orders to modify Bureau operations that many saw as the likely result of the federal investigations, under the Endangered Species Act, that the Bureau was facing at the time. The MSCP now assembles U.S. federal and state water and wildlife agencies, utility interests, and conservation groups to develop specific conservation measures—that the U.S. Fish and Wildlife Service can adopt as recommended plans of action—for over one hundred endangered species on the Colorado River.

In many ways the MSCP is an unprecedented attempt at integrated, basin-wide planning. But some involved say the process is hampered by a glaring omission: to date, there is no Mexican participation or representation. "[The MSCP] could potentially establish guidelines for river management for the next 100 years. So we want to make sure we cast as wide a net as possible and bring all the players to the table," said Defender's Craig Miller, which, along with the Southwest Center for Biological Diversity and several Mexican partners, has spearheaded efforts to open up the MSCP Steering Committee to Mexican governmental and nongovernmental participation. "The tendency when all this got started was for all the players to shut their minds off at the border. We want to encourage them to think across the border," said Pamela Hyde of American Rivers, which also participates in the MSCP.

Despite a growing tendency toward cooperation and restoration, the issue of how to sustainably manage the lower Colorado River basin is far from resolved, and significant obstacles to the restoration of the river delta remain. Key to restoring the health of the delta is increasing its freshwater inflows. Environmental organizations have proposed a number of low-cost, low-technology strategies for increasing fresh water flows to the delta, such as constructing a series of "small earthen dams" in the lower half of the river that during wet years would force water over the banks and into the delta, or funneling treated wastewater from Mexicali's planned treatment plant into Colorado tributaries near the river delta. A small reservoir on one tributary could also help revive the wetlands. Perhaps the lowest-tech strategy to provide water for restoration of the delta would be to reduce consumption, especially in U.S. lower basin states. A few cities, such as Tucson, have successfully implemented conservation programs in order to reduce per-capita water use. But there is still room for substantial savings, especially among agricultural users, which account for 80-85% of the lower Colorado use.

The particularities of delta restoration may still be up for discussion, but the underlying need for binational planning is one thing most parties agree on. As a 1996 study by the Pacific Institute put it, "Any effort to meet basic environmental water needs, particularly in the Colorado River delta region, must involve international cooperation," particularly since Mexico, which uses less than 10% of the river's water, cannot be expected to bear sole responsibility for delta restoration. "A legal reallocation of water to Mexico over and above current entitlements is at this point still highly unlikely," said Pacific Institute's Jason Morrison, one of the study's coauthors. "But it has surprised me how much political will exists, even at higher levels, to figure out ways to restore the delta. There are a lot of potential strategies."

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